

CLAIMS

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1. Method for determining the thickness of a layer of lacquer which is applied by electrophoretic immersion coating to an article (28), wherein the article (28) for immersion coating is immersed in a lacquer immersion bath (12) containing lacquer (4) and generates an electrical field as an electrode with at least one counter electrode (16,18),

characterised in that

the electrical charge flowing through the article (28) during immersion coating and the surface of the article (28) exposed to the lacquer (14) are ascertained and therefrom the thickness of the layer of lacquer is determined.

2. Method according to claim 1, characterised in that the electric current flowing through the article (28) during immersion coating is measured to determine the charge.

3. Method according to claim 1 or 2, characterised in that the surface of the article (28) is determined with the aid of the maximum starting current (J_{\max}) which flows through the article (28) at the start of immersion coating.

4. Method according to any one of the preceding claims, characterised in that the thickness of the layer of lacquer is determined by taking into account the temperature of the lacquer (14).

5 5. Method according to any one of the preceding claims, characterised in that the thickness of the layer of lacquer is determined by taking into account the pH of the lacquer (14).

10 6. Method according to any one of the preceding claims, characterised in that the thickness of the layer of lacquer is determined by taking into account the electrical conductivity of the lacquer (14).

15 7. Method according to any one of the preceding claims, characterised in that the thickness of the layer of lacquer is determined by taking into account the solids content of the lacquer (14).

20 8. Method according to any one of the preceding claims, characterised in that the thickness of the layer of lacquer is determined by taking into account the density of the lacquer (14).

9. Method according to any one of the preceding claims, characterised in that the thickness of the layer of lacquer is determined by taking into account the spacing

between the article (28) and the at least one counter electrode (16, 18).

10. Method according to any one of the preceding claims, characterised in that the voltage applied between the
5 electrode (28) and the at least one counter electrode (16, 18) is regulated in such a way that the starting current at the start of immersion coating at least approximately matches a predetermined value.

11. Method according to claim 10, characterised in that
10 the predetermined value depends on parameters of the lacquer.

12. Method according to any one of the preceding claims, characterised in that the immersion coating is finished as soon as the determined layer thickness has reached a
15 predeterminable desired value.

13. System for determining the thickness of a layer of lacquer which is applied by electrophoretic immersion coating to an article (28), comprising an immersion bath (12) for receiving a lacquer (14) in which the
20 article (28) can be immersed, a voltage source (22), of which one pole (24) can be connected to the article (28) and of which the other pole (20) is connected to at least one counter electrode (16, 18) reaching into the immersion bath,

characterised in that

the system comprises means (22) for determining the electrical charge flowing through the article (28) during immersion coating and a computer (34) which tunes the thickness of the layer of lacquer from the charge and the surface of the article (28) exposed to the lacquer (14).

14. System according to claim 13, characterised in that the means for determining the charge comprise an ammeter (32).

10 15. System according to claim 13 or 14, characterised in that the maximum starting current (J_{\max}) which flows through the article (28) at the start of immersion coating, can be stored in the computer (34).

15 16. System according to claim 15, characterised in that the computer (34) determines the surface of the article (28) exposed to the lacquer (14) from the maximum starting current (J_{\max}).

17. System according to any one of claims 13 to 16, characterised by a temperature sensor (38), connected to the computer (34), for determining the temperature of the lacquer (14).

18. System according to any one of claims 13 to 17, characterised by a pH sensor (40), connected to the computer (34), for measuring the pH of the lacquer (14).

19. System according to any one of claims 13 to 18,
5 characterised by a conductivity sensor (42), connected to the computer (34), for measuring the conductivity of the lacquer (14).

20. System according to any one of claims 13 to 19,
10 characterised by a sensor, connected to the computer (34), for determining the solids content of the lacquer (14).

21. System according to any one of claims 13 to 20,
15 characterised by a density sensor, connected to the computer (34), for measuring the density of the lacquer (14).

22. System according to any one of claims 13 to 21, characterised in that the system comprises a regulating device which regulates the voltage applied between the electrode (28) and the at least one counter electrode
20 (16, 18) in such a way that the starting current at the start of immersion coating has a predetermined value.

23. System according to any one of claims 13 to 22, characterised in that the system comprises a controller which terminates immersion coating as soon as the

specific lacquer thickness has reached a predeterminable desired value.